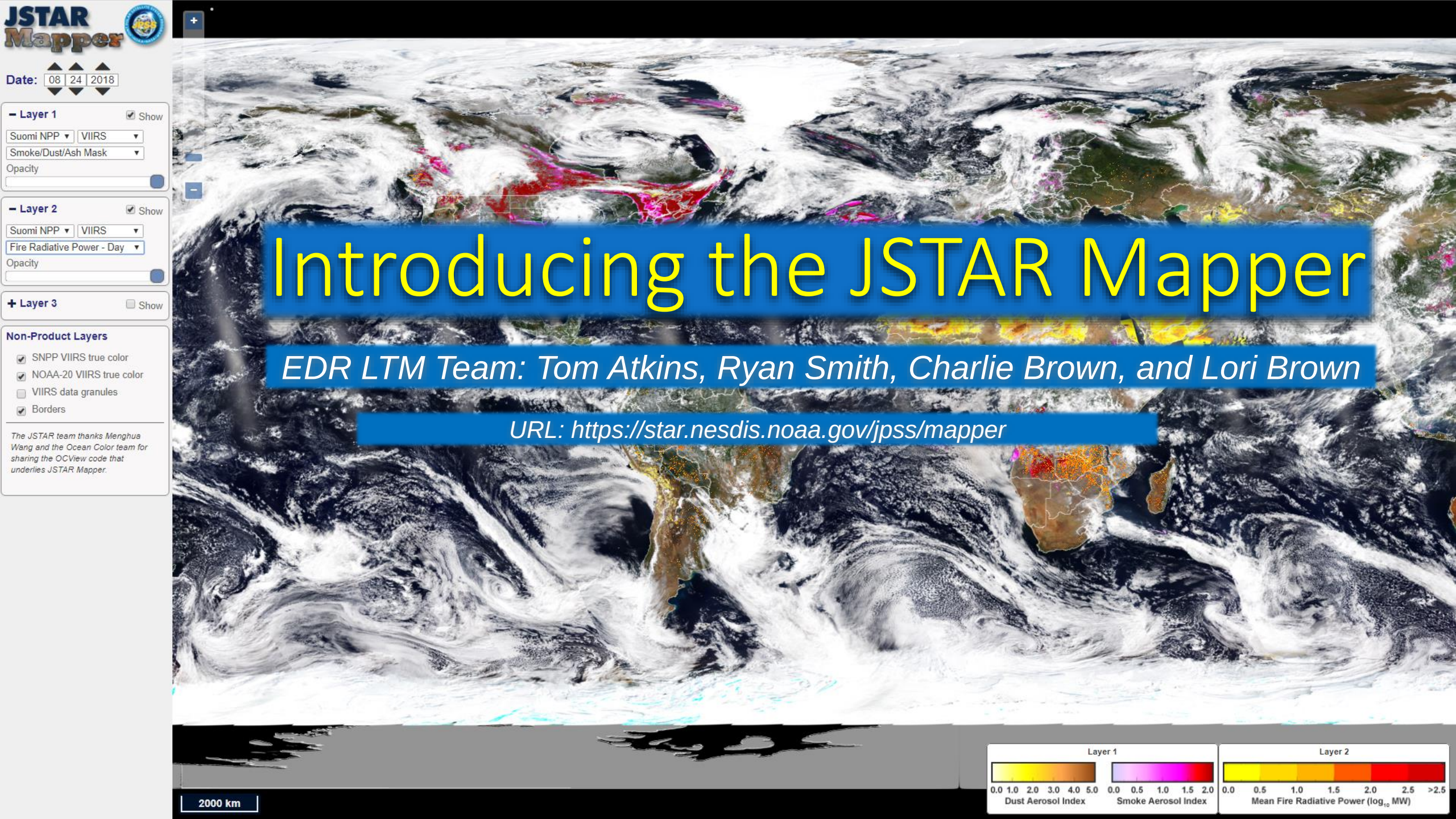

JSTAR Mapper
Date: 08 24 2018
Layer 1 Show
Suomi NPP VIIRS
Smoke/Dust/Ash Mask
Opacity
Layer 2 Show
Suomi NPP VIIRS
Fire Radiative Power - Day
Opacity
Layer 3 Show
Non-Product Layers
SNPP VIIRS true color
NOAA-20 VIIRS true color
VIIRS data granules
Borders
The JSTAR team thanks Menghua Wang and the Ocean Color team for sharing the OCView code that underlies JSTAR Mapper.
Introducing the JSTAR Mapper
EDR LTM Team: Tom Atkins, Ryan Smith, Charlie Brown, and Lori Brown
URL: https://star.nesdis.noaa.gov/jpss/mapper
2000 km
Layer 1
0.0 1.0 2.0 3.0 4.0 5.0
Dust Aerosol Index
0.0 0.5 1.0 1.5 2.0
Smoke Aerosol Index
Layer 2
0.0 0.5 1.0 1.5 2.0 2.5 >2.5
Mean Fire Radiative Power (log10 MW)

JPSS EDR LTM Team Background

- Success of ICVS and the need for consistent monitoring lead to a meeting in 2014 with each team presenting their current monitoring strategies and future plans.
- After the meeting, it was clear that a centralized team would be needed to create and maintain high quality monitoring for all teams.
- Previously JPSS product teams would host images of their operational EDR products on separate websites with varying display formats and availability.
- The EDR Long-Term Monitoring (LTM) team was established to construct a centralized location to host images of the EDR products in a consistent manner
- This site provides an avenue for product teams and users to monitor the long-term performance of JPSS EDR products

JPSS EDR LTM Website

- We currently produce 950+ images for Suomi-NPP daily
- NOAA-20 products are also being produced for select teams
- Includes global images as well as polar images depending on the product
- The website can be found at:

https://www.star.nesdis.noaa.gov/jpss/EDRs/
for Suomi NPP

https://www.star.nesdis.noaa.gov/jpss/EDRs/
for NOAA-20

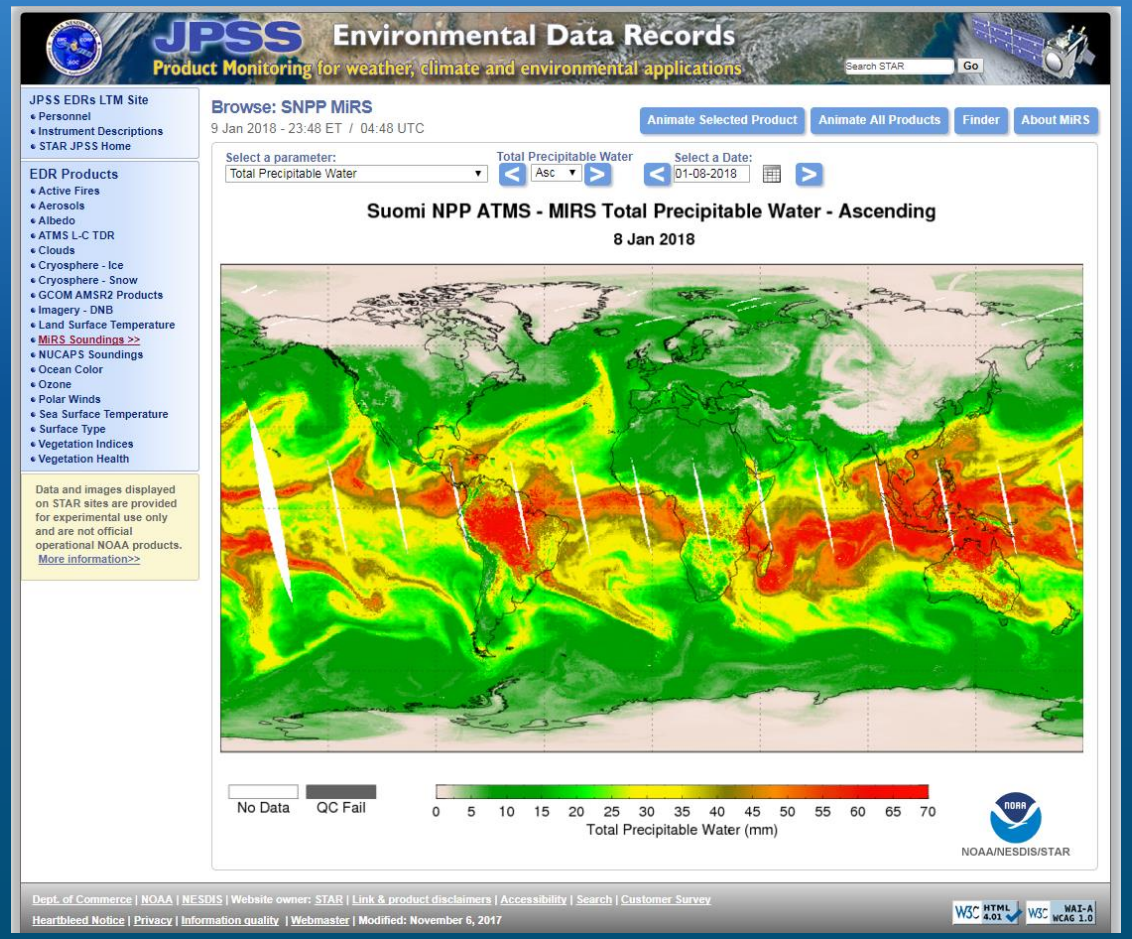


Figure: Screen capture of the JPSS EDR LTM website on Jan. 8, 2018. The product depicted is ATMS – MIRS Total Precipitable Water

Why JSTAR Mapper?

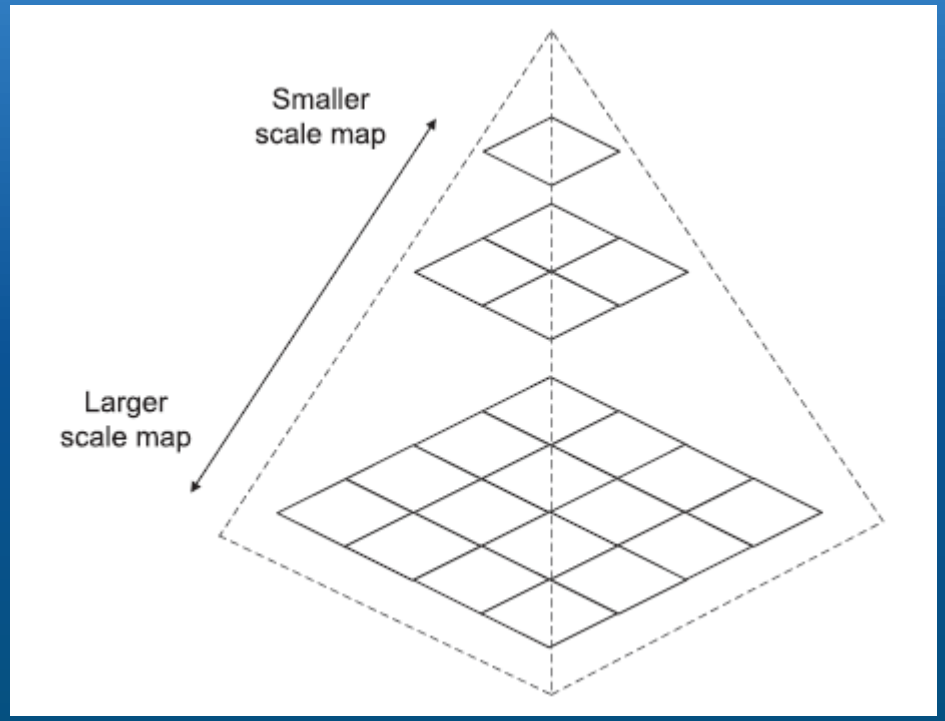
- The EDR LTM team noticed an increase in the volume of requests for images of specific events (e.g. hurricanes, fires, intense snow events).
- The current EDR LTM website is not capable of providing area-specific images of products, which limits our ability to meet these requests in a timely fashion.
- EDR LTM is uniquely situated to create this product because of access to data via SCDR or offline products, existing EDR LTM processing, and great relationships with the scientists
- **The solution**: an interface that will allow EDR products to be displayed in a high resolution fashion with multiple zoom levels

What is JSTAR Mapper?

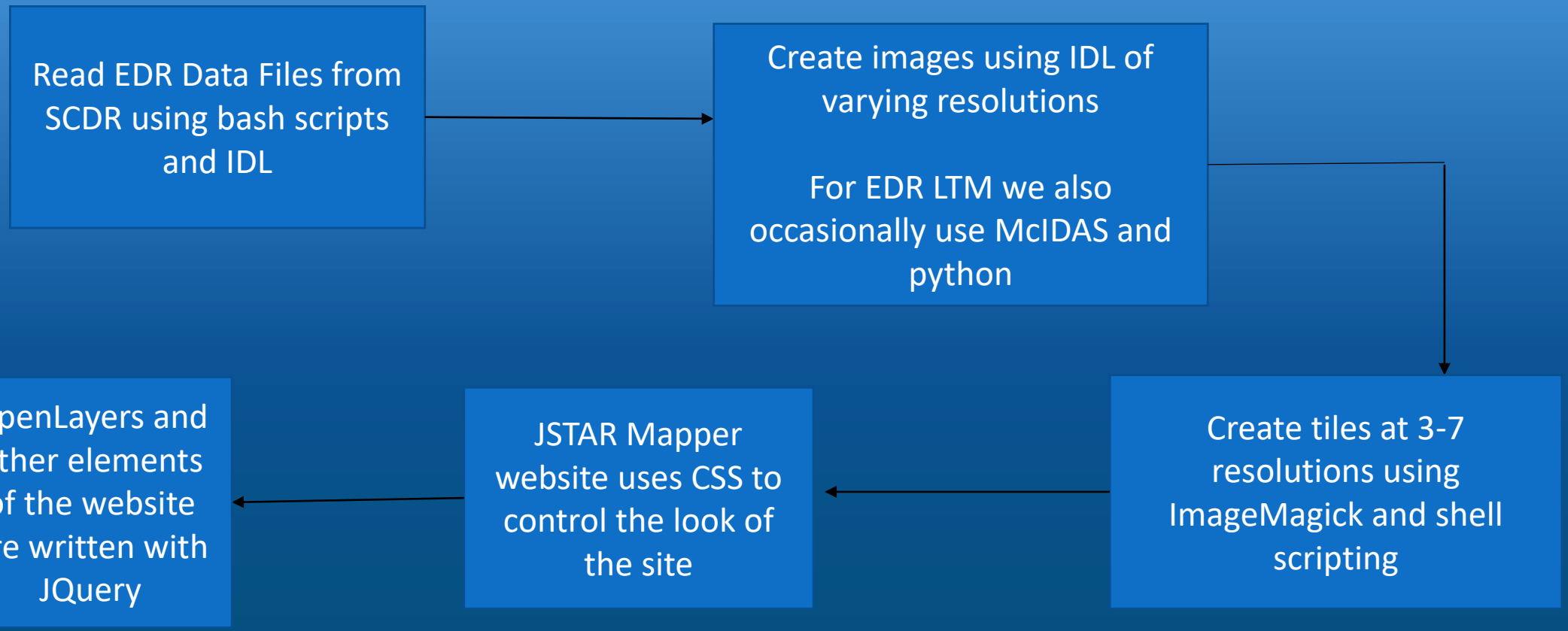
- JSTAR Mapper is built upon the interface already established and used by STAR's Ocean Color team, OCView
- Some features of JSTAR Mapper include:
  - Multiple zoom levels, allowing products to be shown at (or close to) their full resolution (up to 131072 x 65526 pixels - ~ 300 meters at the equator)
  - Up to three layers of products can be overlayed plus various preset backgrounds (blank map, VIIRS True Color during day or I5 Band at night, topographic map, national borders)
  - Optional granule layer to let users identify which data belong to which granule (SNPP VIIRS Only)
  - "Infinite" scrolling to allow a continuous view of global data over time
  - Display latitude, longitude, and measurement of a pixel by hovering the mouse over the desired pixel

How Do We Make The Maps

- Products come in a range of resolutions – from OMPS (50 km footprint) to VIIRS Imagery Band derived products (375 m at nadir)
- Each product is produced from the lowest resolution (1024x512 global map) to the highest possible for the product.
- Images saved as 512x512 pixel “tiles” in a pyramid format – each level is 2 times the resolution of the previous level.
- A free software tool – OpenLayers – is used to display the tiles on the JSTAR Mapper website.
- Most products made daily as of now – but we are beginning to produce some in Near-real time.



How Do We Make The Maps



A Closer Look at JSTAR Mapper

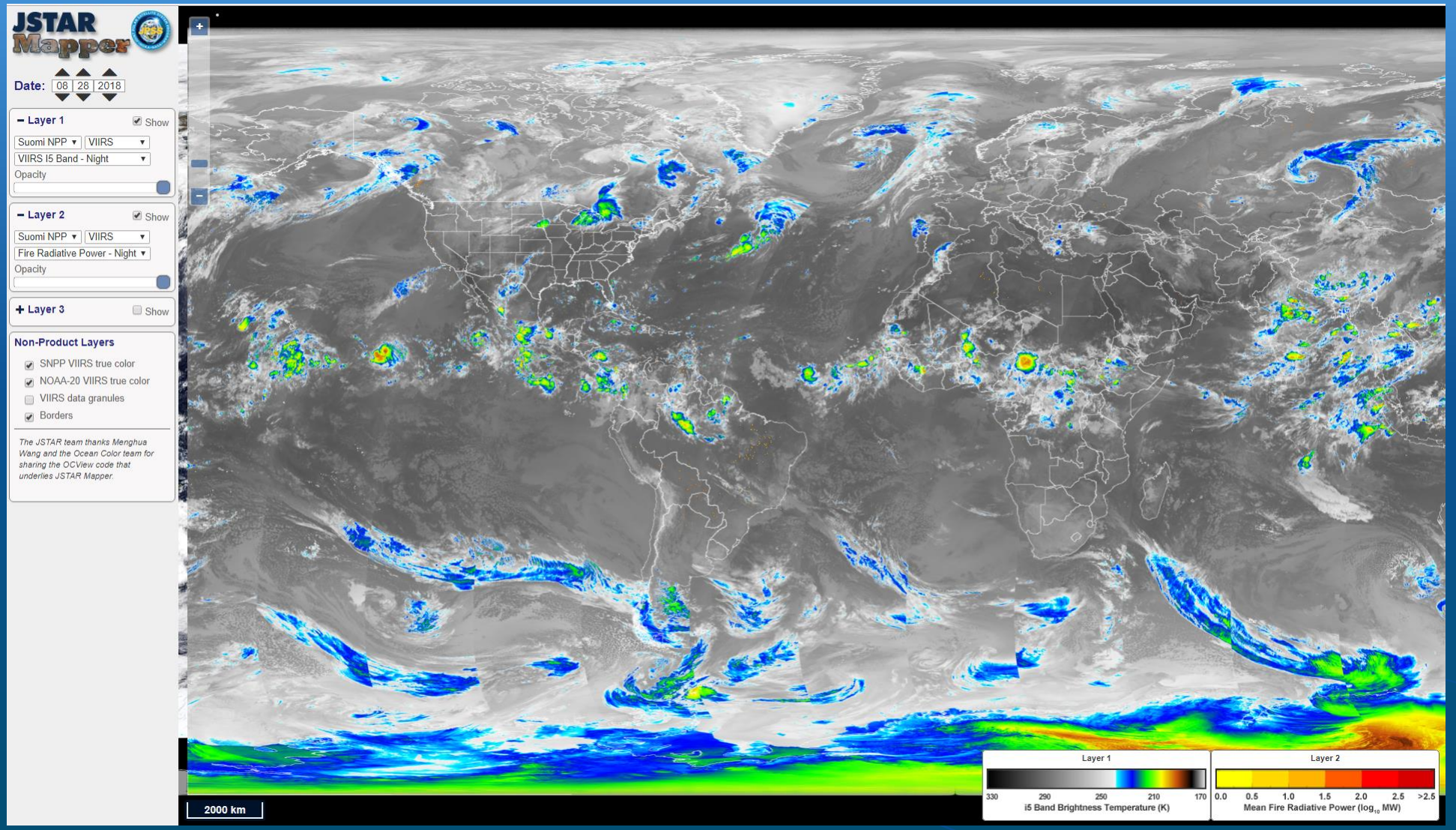
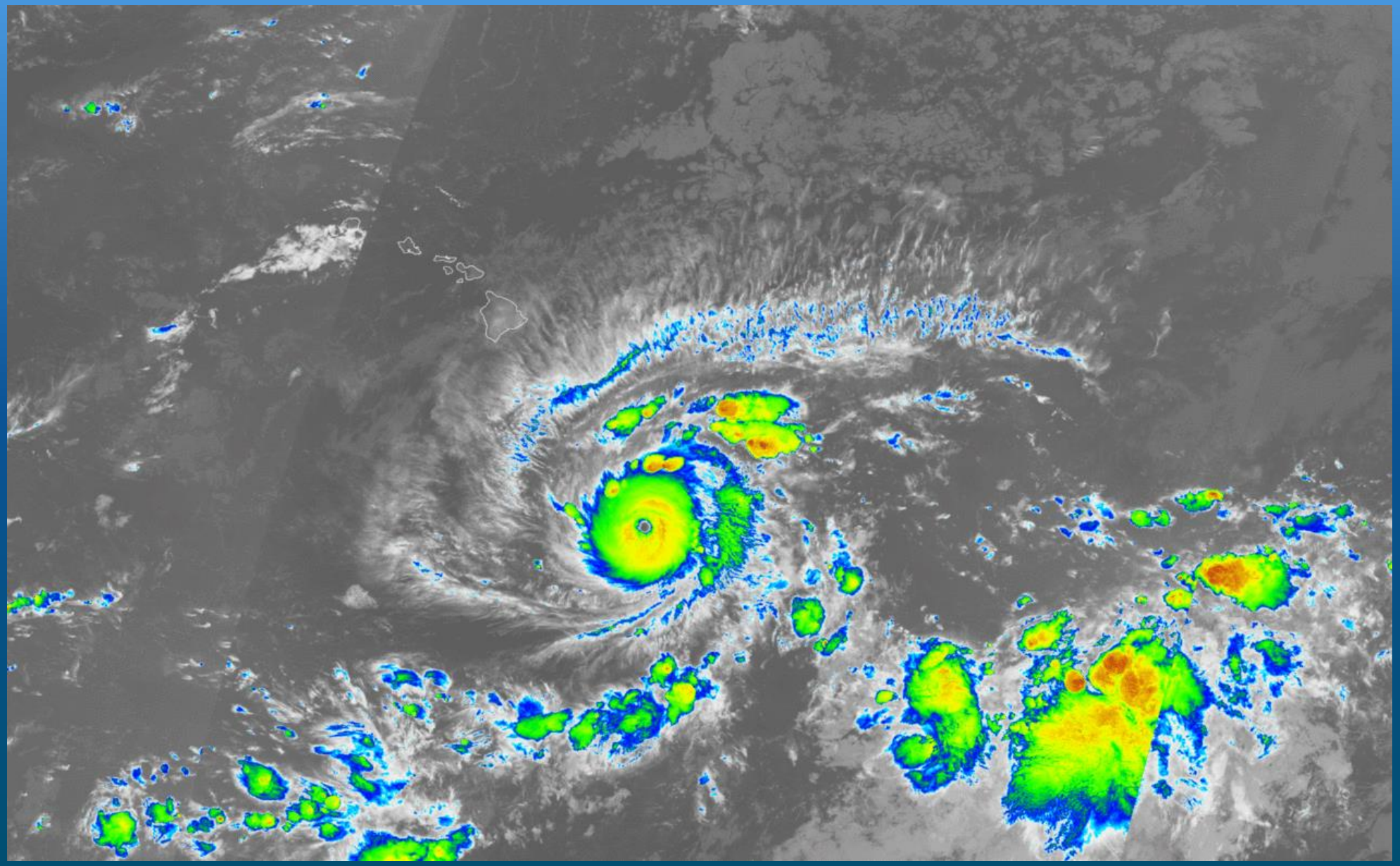
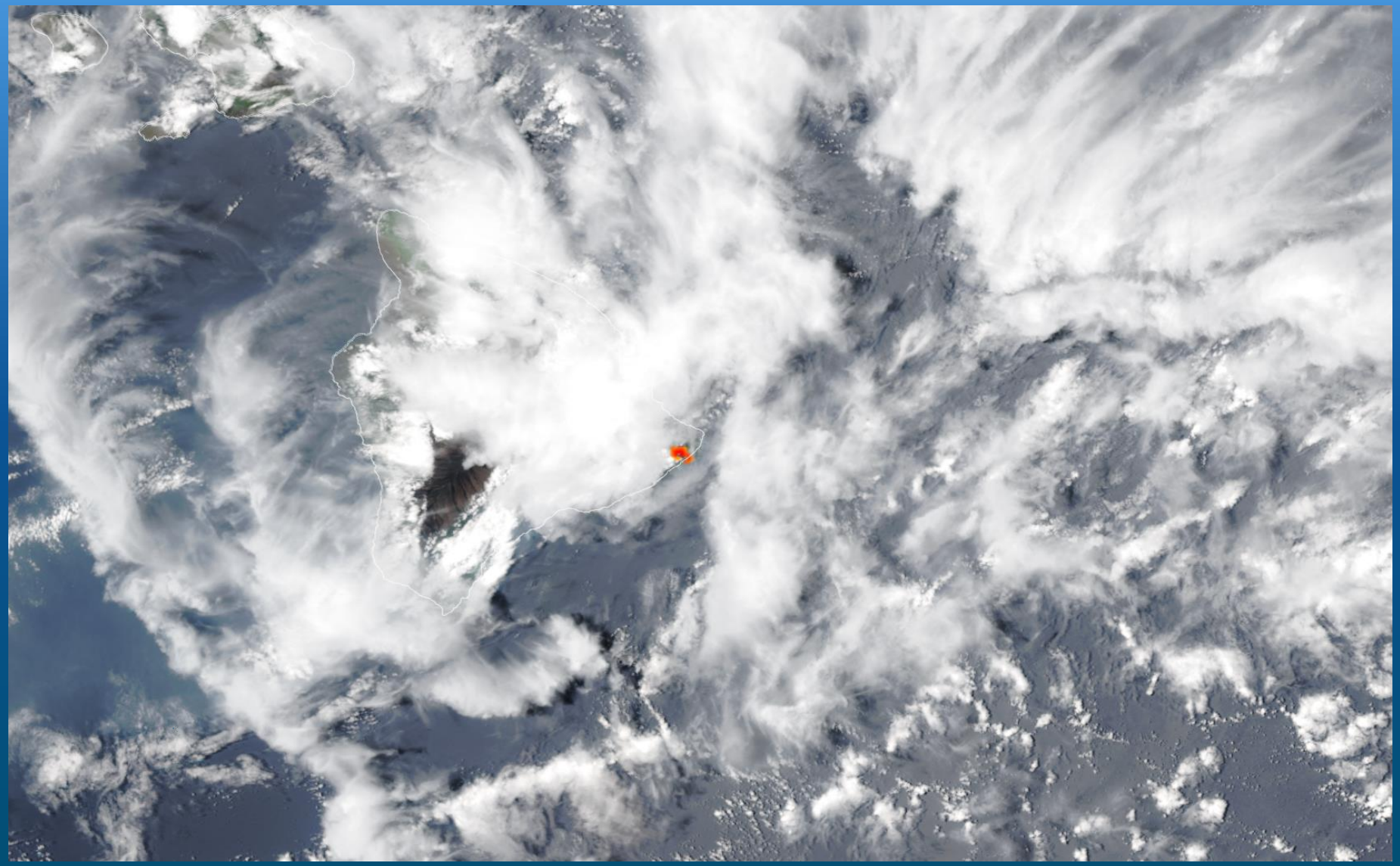


Figure: Screen capture of the JSTAR Mapper website on August 28, 2018. This is a map of VIIRS i5 Band and Fire Radiative Power at night. http://star.nesdis/noaa.gov/jpss/mapper/

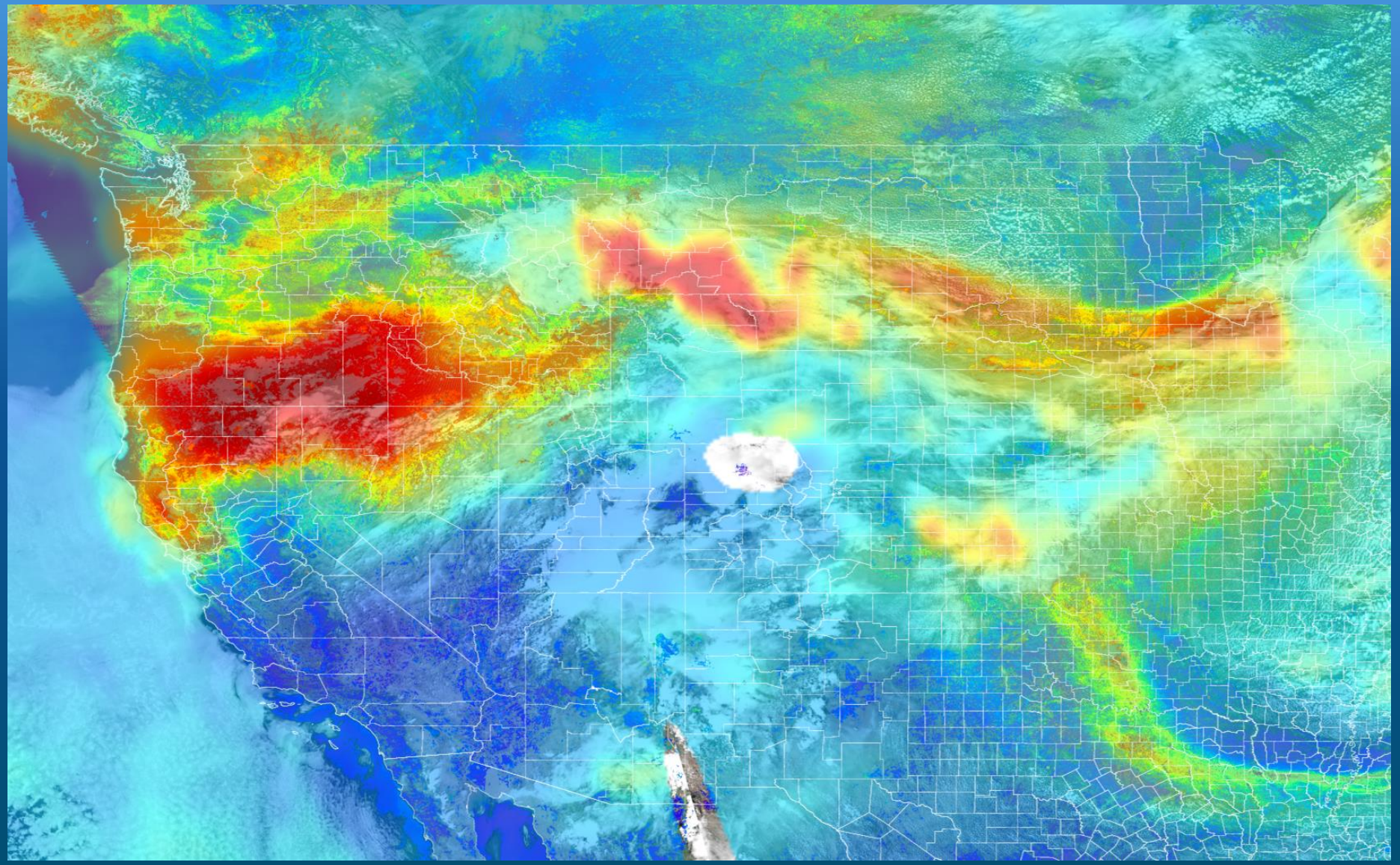
Hurricane Lane



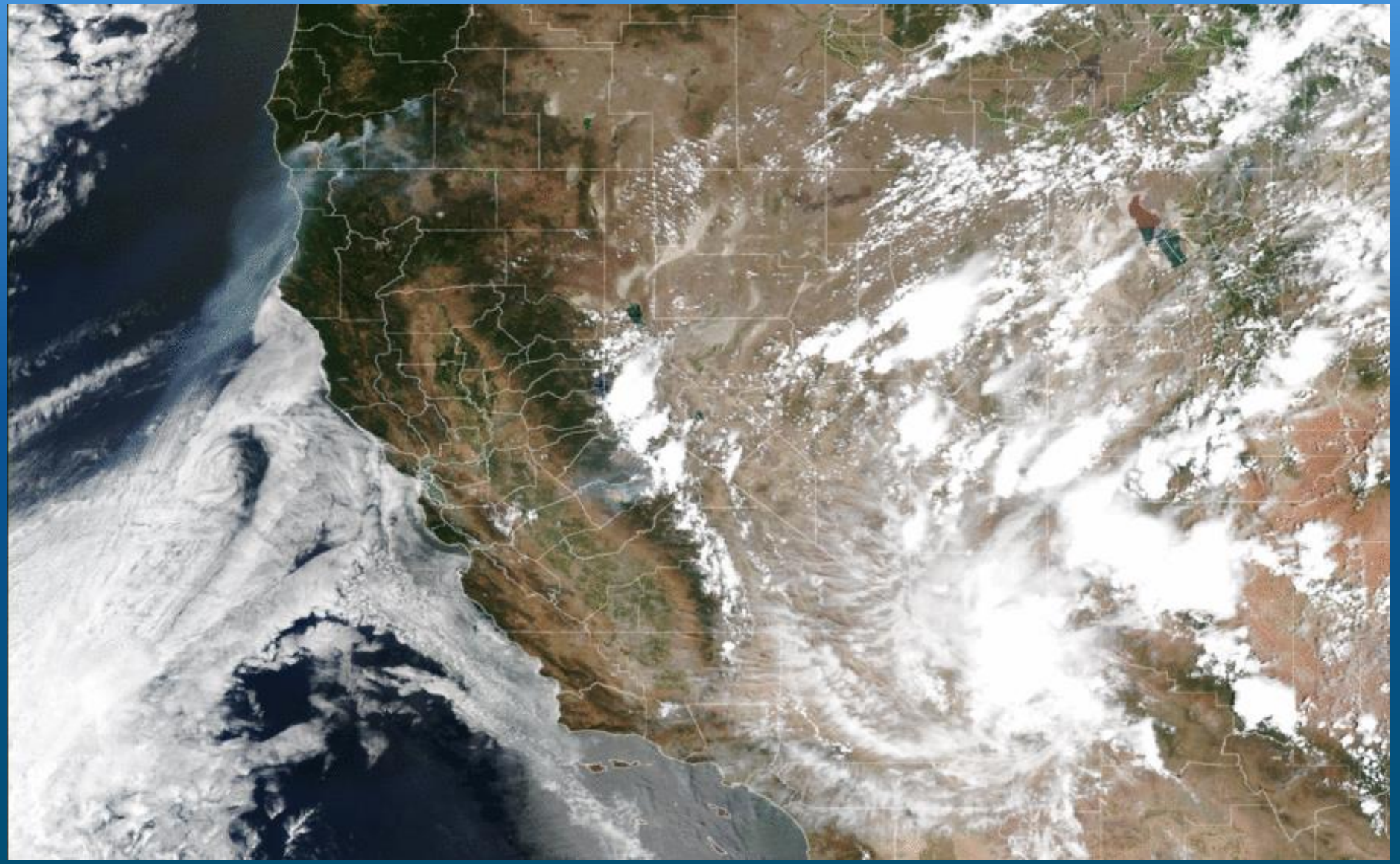
Kilauea Volcano



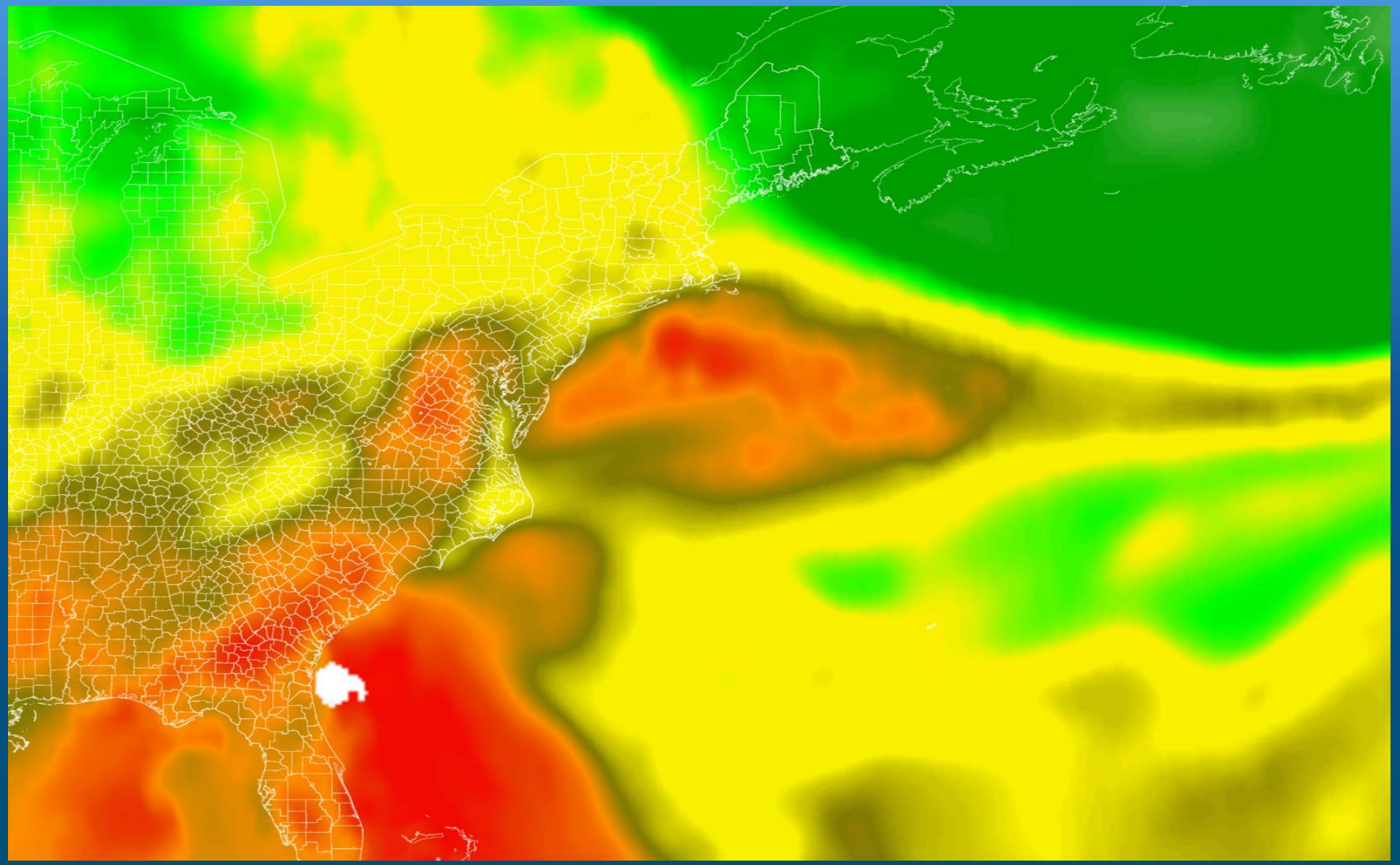
August 2018 Western Wildfires/Smoke



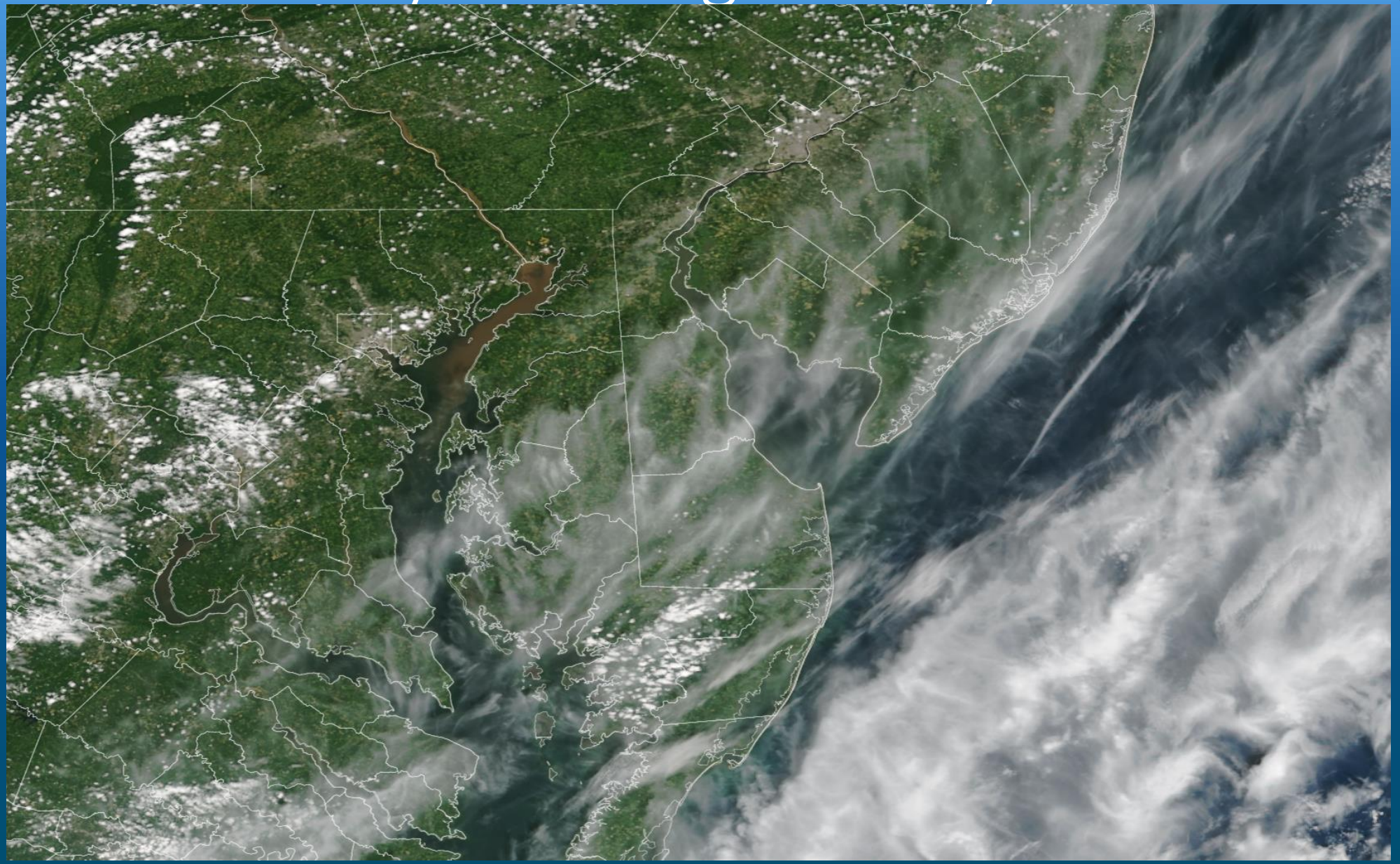
August 2018 Western Wildfires/Smoke



May 27 Ellicott City Flood



July Flooding in Maryland



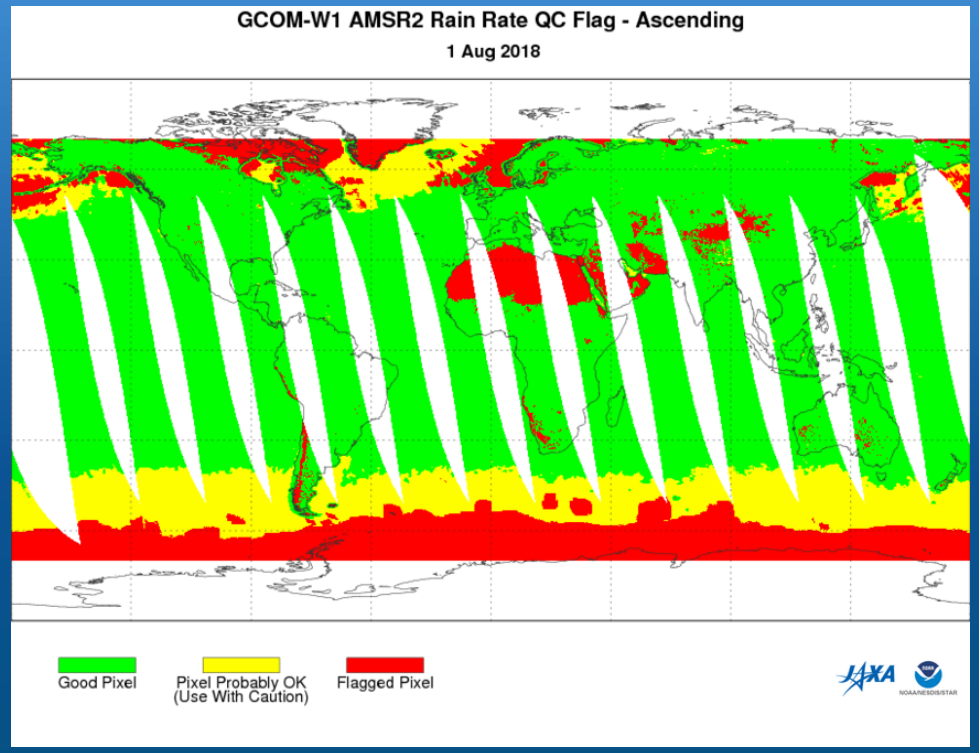
Path Forward: JSTAR Mapper

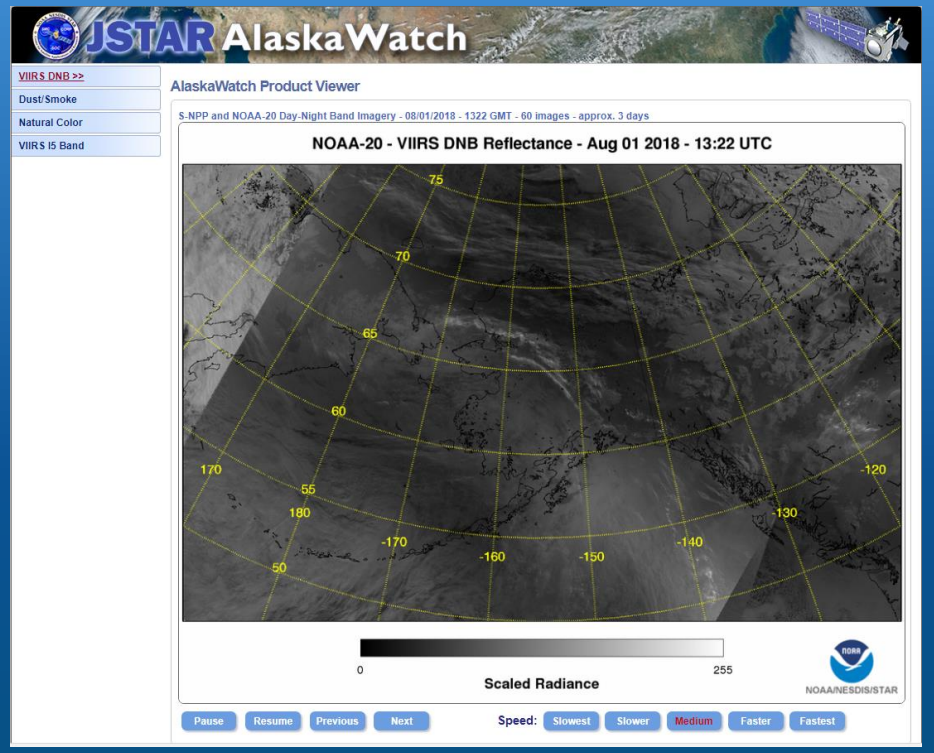
- Near-term improvements
  - Add all available JPSS EDRs initially on a daily basis, then more frequently.
  - Add VIIRS Single Band and RGB images with help of ICVS team – including DNB, Fire Temperature RGB, Snow/Cloud RGB and Natural Color RGB.
  - Add a separate ascending and descending view for appropriate products.
  - Have a polar stereographic site for appropriate products (e.g. Sea Ice Concentration, Snow Cover, etc)
  - Make NOAA-20 products available as they reach provisional status.
  - Create mouse hover function to allow users to obtain data values from map
  - Create granule map for all instruments

Path Forward: JSTAR Mapper

- Create mouse hover function to allow users to obtain data values from map
- Create granule map for all instruments for all 3 satellites.
- User interface changes to make the website better for smaller screens.
- Allow users to easily download single map images or animations of multiple days.
- Allow users to add custom layers for user specific demands.

New Products from EDR LTM team





- Improvements to the EDR LTM site include the consistent addition of new products from Suomi NPP and NOAA-20. We are also adding Quality Flag maps and product Quality charts.
- In addition to the mapper, we have created a new site – AlaskaWatch for meterologists to view JPSS products in near real time to aid forecasting. https://www.star.nesdis.noaa.gov/jpss/alaskawatch/

Thank You

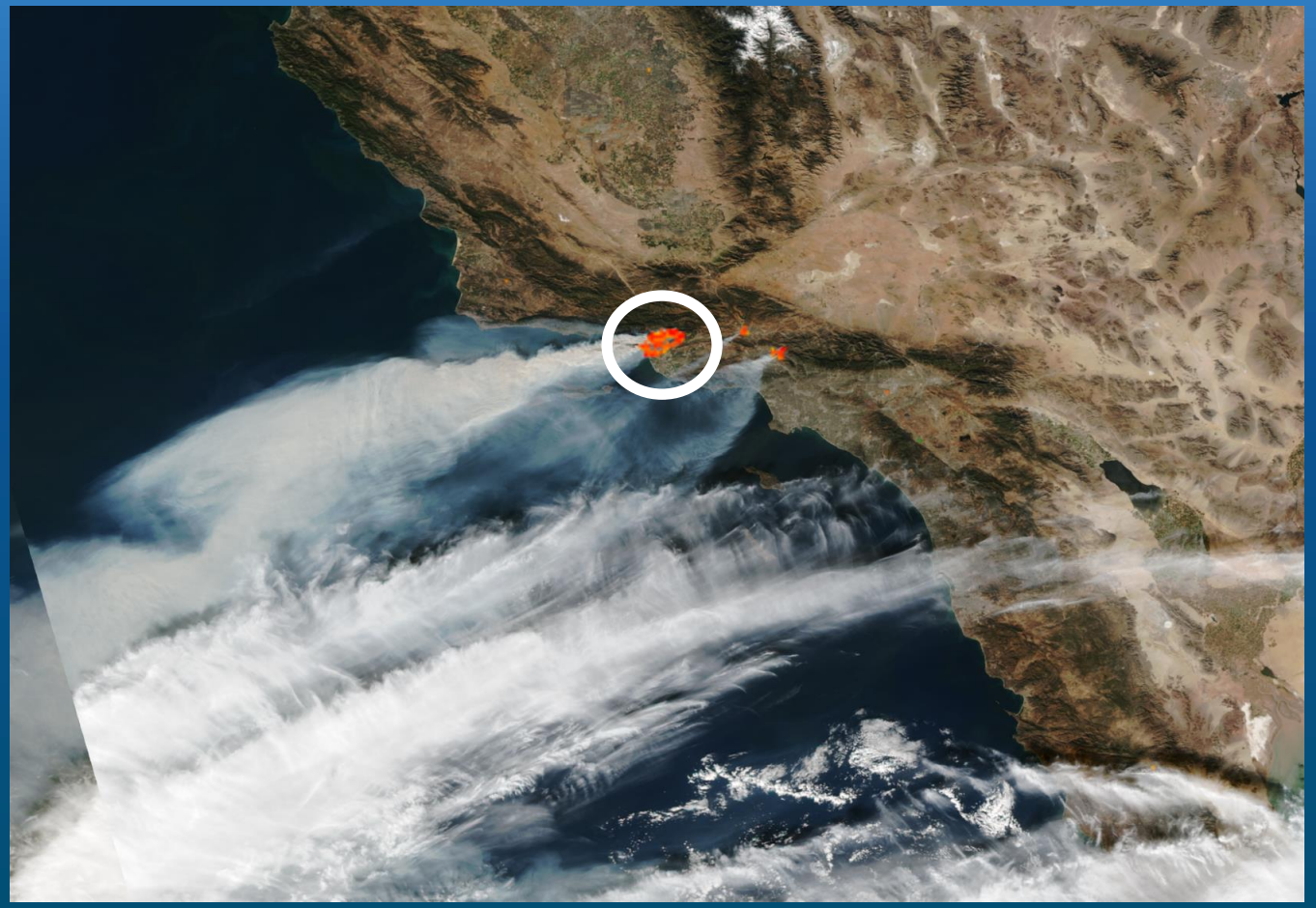
Acknowledgements

- JPSS Program
- Lihang Zhou
- STAR's Ocean Color Team
- All JPSS EDR product teams

Thomas Fire

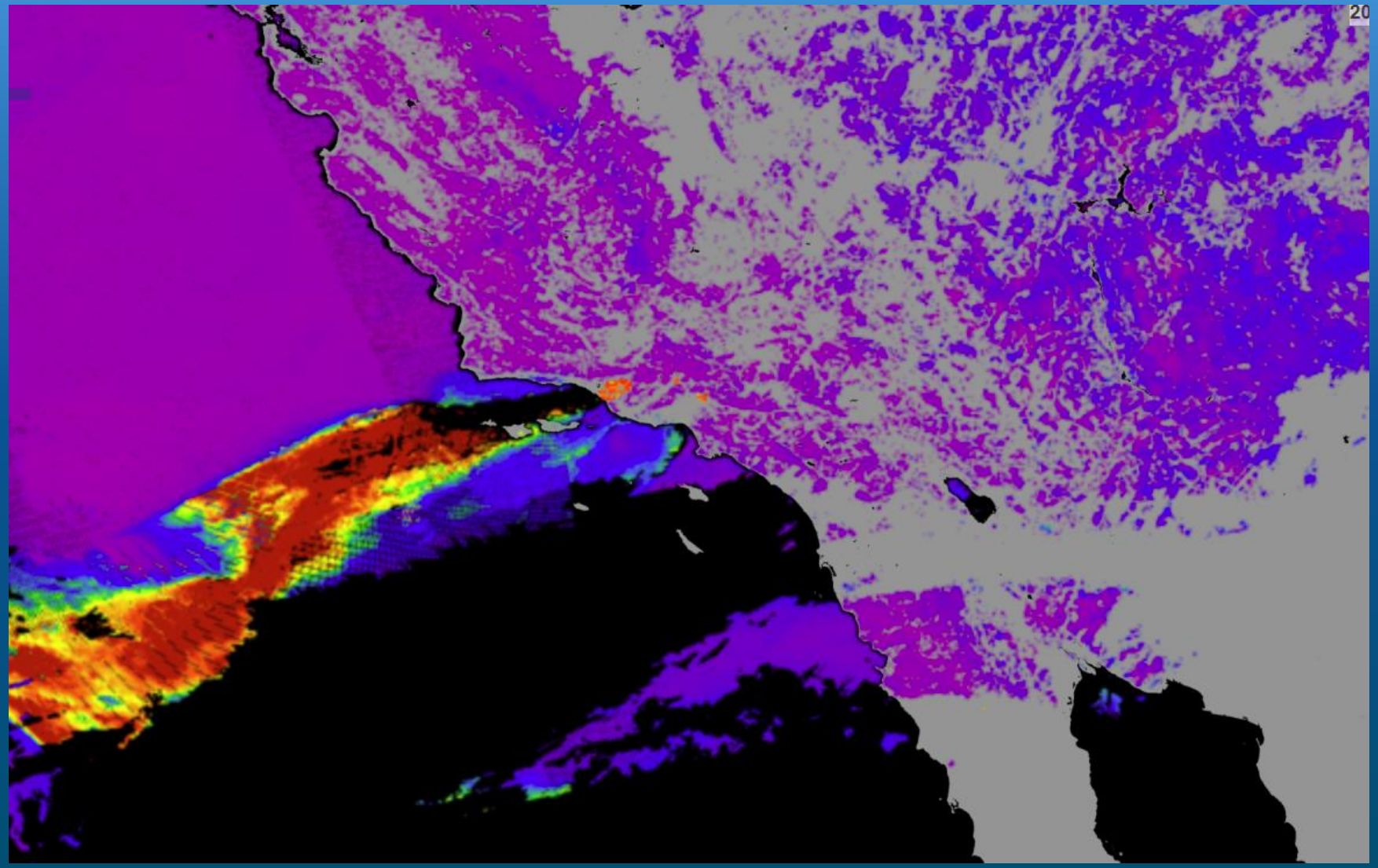
- **VIIRS NDE Fire Radiative Power**

December 5, 2017



Thomas Fire December 5, 2017

- VIIRS NDE Fire Radiative Power
- VIIRS Aerosol Optical Depth at 550 nm EPS



Atlas Fire October 9, 2017

- **VIIRS NDE Fire Radiative Power**